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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,501	09/24/2003	Atsuo Sakaida	116799	2287

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EXAMINER

MRUK, GEOFFREY S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,501

Applicant(s)

SAKAIDA ET AL.

Examiner

Geoffrey Mruk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,8-11,15 and 16 is/are rejected.
- 7) ☒ Claim(s) 2-7,12-14, and 17-20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 21 October 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda (US 4,633,274) in view of Hirata et al. (US 6,129,559).

Matsuda discloses an inkjet head system (Figure 1) having an inkjet head (Figure 1, element 1) and a printed board (Figure 1, element 10) connected to said inkjet head, wherein said inkjet head comprising:

- a cavity plate (Figure 1, element 2) formed with a plurality of ink pressure chambers (Column 2, lines 51-66) arranged adjacent to each other;
- a piezoelectric actuator (Column 2, lines 62-66) placed on said cavity plate;
- and a plurality of driving electrodes (Column 2, lines 62-66) formed on said piezoelectric actuator at positions corresponding to respective ones of said plurality of ink pressure chambers, and
- wherein said printed board (Figure 1, element 10) comprising a plurality of electrode lands (Figure 1, element 6) connected with respective ones of

said plurality of driving electrodes (Column 3, lines 39-47) to supply driving signals.

Matsuda fails to disclose the electrode lands being connected with the respective plurality of driving elements by means of magnetic force.

Hirata discloses a microconnector in which two substrates are electrically connected (Column 9, lines 63-67; Column 10, lines 1-10) by aligning a male connector electrode (Figure 2A, element 24) and female connector (Figure 2B, element 16) electrode with each other by matching magnetic layers (Figure 2A, element 28; Figure 2B, element 20; Column 5, lines 36-50).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the teachings of Hirata in the inkjet head of Matsuda. The motivation for doing so would have been to connect the inkjet head to the electrodes with magnetic force and to match the positions of the inkjet head and electrodes by matching positions of the first and second magnets.

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda (US 4,633,274) in view of Belongia et al. (US 2004/0077187 A1).

Matsuda discloses an inkjet head (Figure 4) comprising a terminal (Figure 4, element 6) to be connected with an external power line (Figure 4, element 15) to receive power for driving the inkjet head (Column 4, lines 36-49).

Matsuda fails to disclose the terminal being provided with magnetic material, allowing the terminal to be detachably connected with the external power line by means of magnetic force. Also, Matsuda fails to disclose the magnetic material is permanently

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magnetized, the magnetic material is ferromagnetic material that is not magnetized, and the magnetic material is iron.

Belongia discloses a terminal (Figure 3, element 30) being provided with a magnetic material (Figure 3, element 36) to allow the power supply (Figure 3, element 12) to be detached (page 2, paragraphs 25-27). Also, Belongia discloses the magnetic material is permanently magnetized (paragraph 27, lines 1-2), the magnetic material is ferromagnetic material that is not magnetized (paragraph 27, lines 7-10), and the magnetic material is iron (definition of ferrous).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the electrical connector apparatus of Belongia in the inkjet head of Matsuda. The motivation for doing so would have been to provide an effective and cost-efficient breakaway power supply apparatus (paragraph 5).

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Scheffelin et al. (US 6,523,940) in view of Hirata et al. (US 6,129,559).

Scheffelin discloses a flexible printed board (Figure 6, element 78) for use in combination with an inkjet head having terminals. The flexible printed board comprises an electrode land (Figure 6, element 71) to be connected with the terminal of the inkjet head to provide power and a conductive layer formed on the electrode land (Column 7, lines 34-51).

Scheffelin fails to disclose terminals that include magnetic material in order to establish a connection using magnetic force where the flexible printed board contains magnetic material that is permanently magnetized.

Hirata discloses a terminal (Figure 2B, element 16) being provided with a magnetic material (Figure 2B, element 20) to allow smooth connection or disconnection of the connectors (Column 23, lines 33-57). Also, Hirata discloses the magnetic layers attract each other, thereby connecting the male and female electrodes with each other. Also, Hirata discloses magnetic layers that can be formed by working permanent magnets into prescribed shapes or depositing magnetic materials (Column 10, lines 1-10).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the teachings of Hirata in the inkjet head of Scheffelin. The motivation for doing so would have been to connect the inkjet head to the flexible printed board with magnetic force and to match the positions of the inkjet head and the flexible printed board by matching positions of the first and second magnets.

Allowable Subject Matter

Claims 2-7, 12-14, and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 2, Hirata fails to disclose one of the first and second conductive layers includes a permanently magnetized material and the other of the first and second conductive layers includes magnetic material that is not magnetized.

With respect to claims 3-7, claims 3-7 are dependent on claim 2.

With respect to claim 12, Belongia fails to disclose a thermosetting resin that includes a magnetic material.

With respect to claim 13, claim 13 is dependent on claim 12.

With respect to claim 14, Belongia fails to disclose an adhesive agent that includes a magnetic material.

With respect to claim 17, Hirata fails to disclose the magnetic material is ferromagnetic material that is not magnetized.

With respect to claim 18, Hirata fails to disclose a conductive layer that is made of a thermosetting resin including a magnetic material.

With respect to claim 19, claim 19 is dependent on claim 18.

With respect to claim 20, Hirata fails to disclose a conductive layer that is made of an adhesive agent including a magnetic material.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Weiss (US 6,854,985 B1) discloses an invention for making an elastomeric device for electrically interconnecting two or more components that comprises the steps of embedding a plurality of conductive, magnetic particles in an elastomer.


Verlinden et al. (US 6,817,698 B2) discloses an invention in which a nozzle plate can releasably be fastened to the body by magnetic forces.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM
2/25/2005


MANISH S. SHAH
PRIMARY EXAMINER